October, 1982
NEWSLETTER

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Vol. 2, No. 10

MICHIGAN ATARI COMPUTER ENTHUSIASTS

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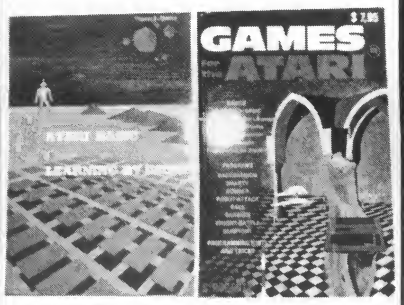

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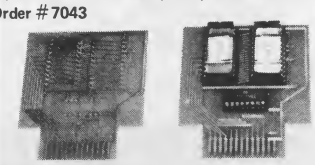

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POKES FROM THE PREZ

By Marshall Dubin
President, MACE

It was nice to see such a good turnout at the September meeting, especially since the meeting was mostly business. Now that we are meeting in a palace (the Southfield Civic Center Pavillion), we can accomodate lots more people. Whew! I still can't get over the size of that room!

We will be having more and more activities at the regular meetings. Besides presentations, we will have complete program library services, refreshments, and possibly some other assorted happenings. Maybe some of the SIG groups want to take advantage of pre-meeting time to have informal meetings, or 'open house' sessions for new members and guests. We have the room now to do this, and SIG groups wishing to take advantage of this should see me at the next meeting.

How about a 10 foot projection TV? Well nothing's too good for our membership. Hopefully by the time you read this, the sharp increase in local Optometrists earnings on the third Wednesday of every month will cease, and members will be able to go through an entire meeting without coming out looking like three hundred Popeye lookalikes

Would you believe MID-AMERICA ATARI COMPUTER ENTHUSIASTS? Well folks, this is one item of business we'll have to discuss some time in the future. It appears that there is interest by out of state groups to affiliate with MACE. Granted such a move could benefit all involved, but the coordination of such a project would be a large, complicated task. This brings up a vital question, namely, how big do we grow? Granted, we have almost 800 members. Our mailing list requires a mainframe to keep track of. But lets be realistic. To continue growing and maintain the high level of services that MACE members have come to expect is going to require more people pitching in and getting involved. We need your help!!!.

I'm talking about the coordination of memberships, communications, newsletter subscriptions, distribution and sales, library distribution and sales, program planning, and a whole lot more! For a LOT more people! Although on the other hand, you have conventions, special events, the best newsletter in the country, and the benefit of being able to share a veritable Mongol horde with similar interests. Whatever we decide to do, lets do it carefully and responsibly.

And so, here's to the 'Year Of The Home Computer'. The year of MACE. I hope to see a big turnout at our regular meetings. We have lots of room now. We encourage guests, and the public is of course welcome (except to special closed meetings). We meet on the third Tuesday of every month, 7:00 PM in the Southfield Civic Center Pavillion. See you there!

THE WRITER'S BLOCK

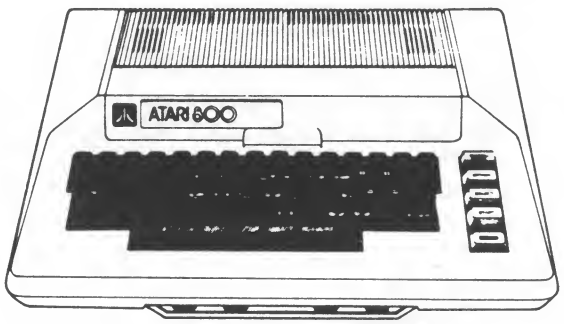
by Arlan Levitan
MACE Newsletter Editor

Well the shoe's on the other foot now, and I'm just learning how much work this newsletter editor job really is? Please be patient with me and the new staff while we learn the ropes and stretch out with experiments in publishing at times.

The only thing I've got time to mention is that Atari is now shipping all 800s from the factory with 48K of RAM at no increase in the present list price of $899! Something in the air around Sunnyvale...? You bet! Just wait until the January Consumer Electronics Show! Did any of you see the Atari employment ad in Infoworld some time back? One of the positions available was group leader for a unit that was designing the operating system for a "exciting new personal computer".

Lastly, WHY DON'T ALL YOU FOLKS WHO ASK ME AT THE MEETINGS IF I KNOW ANYBODY WHO NEEDS A USED FRAMMIS OR WANTS TO BUT A WIDGET IN GOOD SHAPE SEND PERSONAL CLASSIFIEDS TO THE NEWSLETTER??? I and about ten other people use our MACE member privilege to place free non-commercial notices in the newsletter regularly. I've sold everything I ever advertised. You've got over eight hundred Atarians in this group, and believe you me, it's worth the twenty cent stamp. Send your short notices to the P.O. Box, Dept. CL.

Hope you like the newsletter...I promise you it will only get better and better.



LET'S GET ORGANIZED

By Jerry White

Computers are very useful gadgets when it comes to recording and organizing information. When used in a logical and organized manner, the user should be able to retrieve data quickly and easily. Computers can eliminate much of the time which is wasted by looking through reams of paper and file cabinets for important records.

Unfortunately, there are few standards in this industry which leads to confusion on the part of the computer user. Manufacturers all seem to find it necessary to use their own unique BAUD rates and diskette formatting. Software vendors have little or no communication with each other. This is why a simple user response to "CONTINUE" might be, "PRESS RETURN", or "PRESS ANY KEY", or "PRESS START", or "TYPE C or G", or "SEE MANUAL".

So what can we do about this mess? We have no control over manufacturers or software vendors. We cannot change the world, but we can help ourselves and set an example by setting some standards for ourselves. Maybe, we can help start a trend towards standardization and show the world that it can be done.

We can start by setting standards for disk filenames. Here, we already have some standards to build upon. A filename consists of up to 12 bytes. Using Atari's DOS 1 or 2, the rules are quite simple. The filename may be up to 8 bytes. The first byte must be an uppercase letter. The following 7 bytes may be either uppercase letters or numbers. If a filename extension is used, byte number 9 becomes a period, followed by up to 3 more uppercase letters or numbers.

The first 8 positions should be as descriptive as possible. My proposal is that we standardize the filename EXTENTION.

The most common type of file is the BASIC program. For BASIC programs, some people use the extention .BAS. This is logical, but I don't think it's the BEST way. There are currently 3 versions of BASIC available on the ATARI. The most common is 8K ATARI BASIC. Let's save 4 keystrokes and let no extention indicate the most common file. Then let's all get together and use these extensions (listed alphabetically) . . .

.AWP Atari Word Processor
.BAP Basic A+
.DAT DATa File
.FNT FoNT (Character Set)
.LPD Letter Perfect Data
.LSP LiSP
.LST LiSTed or ASCII format
.MAC MACro Assembler Source
.MBD Music Box Data
.MPD Micro Painter Data
.MSB MicroSoft Basic
.MUS MUSic Composer
.OBJ OBJect code
.PAS PAScal
.SRC SouRCe code
.SYS SYStem
.TWD Text Wizard Data
.VWD Versa Writer Data

I also believe that DATA files within a specific software package can be more easily identified by using unique filename extentions. For example, in my FILEIT2 package, there are three types of DATA files. There is a free form 80 character record where the user can create his or her own record layout. For these files, I recommend the extension .DAT. There are also fixed filed records which are designed specifically for LABel data (Names, Addresses, Towns, and Zip Codes). I also have programs specifically designed for financial accounting. For FINancial data files, I append the extension .FIN.

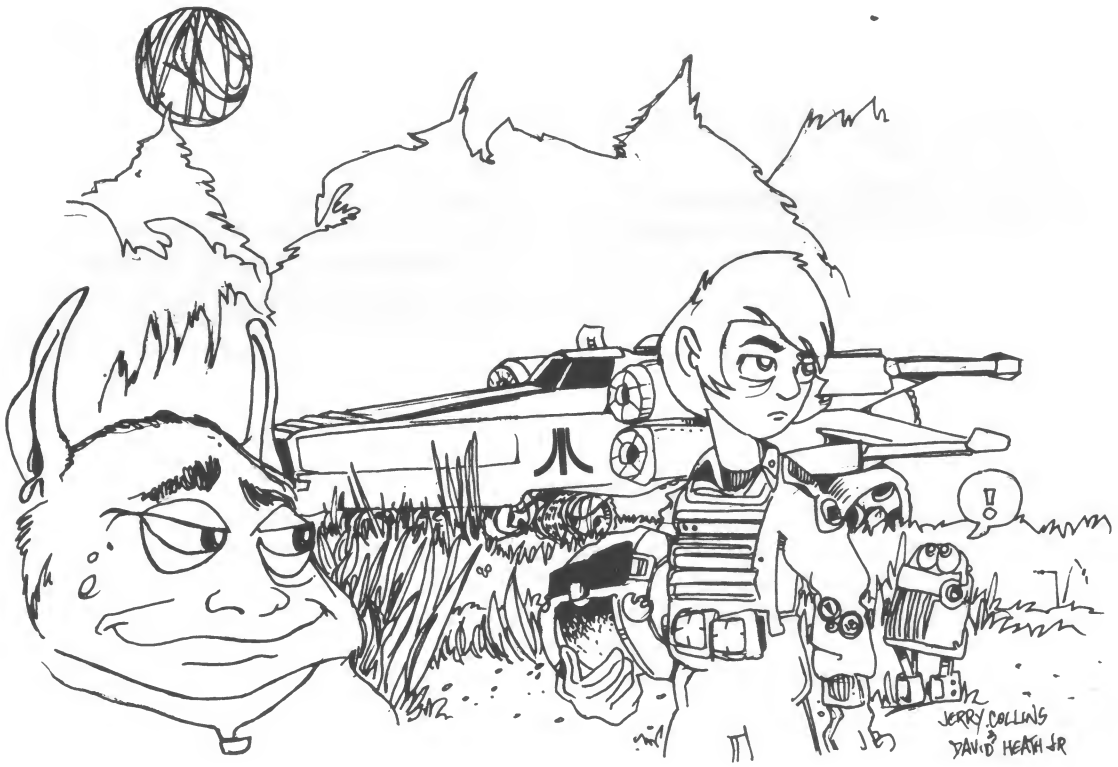
The FILEIT2 user may store up to 64 different data files on one diskette. By using .DAT, .LAB, and .FIN, and descriptive filenames, he or she can easily identify these files. This also made it possible for me to check the user specified input filename, to help insure that my Financial Report generating program will not read a data file which is composed of LABel information.

What's the extention .MBD? You say you've never heard of Music Box! That's because it's not yet on the market but it should be very soon. I hope Mike doesn't mind this little plug. Music Box is a package I just finished for P.D.I. In a nutshell, it's a series of programs related to ATARI's Music

Composer. It converts Music Composer files to a new format and permits user specified decay rate for each voice. The new Music Box files may be played by two other programs in the package. One of these programs is a color organ that changes colors on the screen based on the pitch and volume of each voice. The other plays the .MBD files during VBLANK and allows you to use BASIC to do virtually whatever you want as the music is played independently. The package contains a few other goodies too, but the point is that I had to have a way to identify which files were generated by Music Composer and which were converted to Music Box format. Standard filename extentions make this possible.

Programmers often have many different versions of a program in development stages. In this case, the filename should contain the version number. The extension should conform to the standards described above for the sake of standarization.

If I've left out anything, let me know through M.A.C.E. Hopefully, we can update and reprint these standards from time to time, and start getting organized.



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WIDE ANGLE ATARI

A Review of the Full-View 80 display board
for the Atari 800 computer

by Arlan R. Levitan

Group Commander Ahta Reeh checked the Galactic Map and pinpointed what was surely the last pocket of Zylon resistance in Sector 707. "It's about time," the stalwart defender of the universe thought. "Let's get this over with. I've got some heavy-duty word processing to do in the evening."

Star Cruiser 7 made the hyperspace jump with effortless ease and materialized within a mere fifty centons of what the battle computer identified as an all too familiar Tie Fighter. A wave of compassion swept over Reeh, who thumbed the sub-space radio on and beamed an offer of clemency to the doomed Zylon ship.

"Drop your shields and surrender General Rejistor. I've no desire to shed any more green blood today."

The alien's reply was hissed more than uttered. "We Zylons do not bargain with crude savages armed with stone-age tools...even your battle computer displays are only a pitiful forty columns wide!!!"

Reeh's grip on the phaser bank trigger slowly tightened...

Meanwhile, Back on Earth...

Believe it or not, there are life forms around today that echo sentiments similar to those of the Zylons. Namely that if a computer doesn't have an eighty column display, it can't be taken seriously. While such a position is rather extreme, it must be acknowledged that the combination of an eighty column text display and the right software can greatly enhance the utility of a personal computer for some users.

Microcomputer owners who regularly access computer time sharing systems can benifit. Most large and medium sized commercial computer systems use video terminals that display twenty-four lines of text, with eighty characters per line. Many data processing professionals use personal computers to work from home during off hours. Displaying material that is created in eighty column format on a forty column screen can be quite confusing, especially if column-oriented data is involved.

A standard feature of many professional Word processing systems is the ability to format text to a screen display that can accurately preview how a document will look before printing it. Errors that require reformatting or changes to the text may be corrected without subjecting your printer to unnecessary wear and your wallet to higher than desirable paper costs.

In short, more data on the screen can mean more usable information presented to you, the user, at one time.

Special circuit cards that make it possible for computers such as the Apple II to display 80 columns rather than the usual 40 have been available for several years. The Bit 3 Computer Corporation has drawn upon its experience in this area and released an 80 column board designed to expand the text display capabilities of the Atari 800 computer. Before getting into the details of Bit 3's Full-View 80 board for the Atari a discussion of why many home computers, including the Atari 800, are designed to display less than eighty charcters per line is in order.

The designers of the Atari 800 personal computer structured the text and graphics displays of the system around the capabilities of the most common color video display device found in the home: the television set. While this design eliminated the need for Atari owners to purchase a separate monitor, it did impose certain limits upon the amount of text that could be displayed.

LIVING WITHIN LIMITS

A measurement referred to as bandwidth is the major determinant of the number of separate dots per line that may be clearly displayed. It's not necessary to get into the mathematics involved in determining bandwidth. All you need to remember is that the higher a monitor's rated bandwidth, the finer its horizontal display can be. To clearly display the output of the Full-View 80, Bit 3 recommends that a display monitor having a minimum bandwidth of 10 Megaherz should be used. The average color TV has a bandwidth of only 3 Mhz, and even the best color monitors driven by standard video signals are rated at only 6Mhz.

Why do we need a monitor with such a high

(continued)

bandwidth? All because of a tiny creature called a pixel, which is the smallest separate dot of light that can be displayed by most computers on a TV screen. The Atari 400 and 800 can display a maximum of 320 such dots on a single horizontal line, and can stack 192 such lines up to fill the TV screen. The Atari display is therefore said to have a maximum display resolution of 320x192. This is very close to the maximum number of pixels that the TV itself can display.

The screen editor on the Atari displays each text character as a pattern of lighted dots within an 8x8 matrix or cell. Dividing the horizontal and vertical resolution by the number of pixels each character uses we arrive at a display of 320/8 x 192/8 or 40x24.

Can't we squeeze more text onto each line by using a smaller matrix for each character? Yes, but doing so reduces the legibility of the display as the width of each character narrows. Software packages that display 64 or 80 characters per line utilizing smaller cell width usually also provide the user with a good case of eyestrain.

Eighty column boards overcome the limits of resolution built into many personal computers by incorporating independent circuity capable of generating extremely high resolution monochrome displays. The Full-View 80 uses an 8x10 cell matrix for each of the eighty characters on the display line. The resolution of the FV80's eighty column by twenty-four line display is therefore 640 horizontal by 240 vertical pixels. The large number of dots in the display is why the FV80 requires a high resolution monitor. The introduction of the twenty-four page user manual clearly states that the unit will not work with a TV set.

This makes a high quality monochrome monitor the most logical choice for use as a display unit with the FV80. Such monitors range in price from $120 to $250 and are available in a variety of display colors. Green phospor displays are generally the easiest on the eyes, but black and white and even amber displays are available to suit individual tastes.

Even a novice will find installation of the FV80 easily accomplished by following the clear instructions given in the manual. The board simply plugs into the last memory slot of the Atari 800. A thin, flat set of wires attached to the FV80 is run out of the 800's memory cage and the system cover is reinstalled. Metallic tape is supplied to keep the Atari's cover from cutting into the flat ribbon wire. The wire is terminated by two separate plugs. One is connected to the five-pin jack on the right side of the 800, the other to the high resolution monitor.

While there is no minimum RAM requirement for using the device, this hardware set-up does impose some minor restrictions.

Since the FV80 uses the Atari's last memory slot, a 32K memory board must be used in conjunction with one 16K card to run a full 48k system. Although Bit3 recommends their own Memory-Plus board, any good quality 32K unit will suffice.

Also, if you are already using that five-pin jack to feed your Atari's audio signal through your stereo system or a color video signal into a TV with video input jacks, it will be necessary to build a simple Y-connector to continue doing so.

OPERATION

The Bit 3 board did not interfere with any of the regular Atari-based software I ran. The FV80's on-board circuitry remains dormant unless it is specifically activated. The simplest way to do this is to type "A=USR(54818)" directly from Atari's 8K cartridge Basic. This jumps to a routine located in ROM on the FV80 board that works some internal magic (actually, it installs the FV80 as a new device in the 800's device table and redirects output normally vectored to the screen editor to the Bit 3). The screen blinks, clears, and the familiar READY prompt from BASIC appears at the top of the now eighty column wide display. Happily, any program that was in memory before the USR jump will still be there.

The character set produced by the board is crisp and readable. All the full screen editing capabilities of the Atari are retained and some new functions are added. "CTRL C" toggles the cursor character between an underline or the familiar inverse block. All characters on a single line to the right of the cursor may be erased by typing "CTRL E". On the drastic side is "CTRL S" which will erase everything on the screen past the present cursor position. I soon found that I preferred the underline cursor and that the delete to end of line feature was a real plus.

Another feature is described as a "Video

(continued)

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Switch". The manual makes it sound like you can flip between forty and eighty column displays by typing "CTRL A" and "CTRL B" respectively. This is not exactly the case. What the switch does do is flip between text and Atari graphics modes. Once turned on, the FV80 display is automatically deactivated by Graphics modes other than zero and reactivated by returning to Graphics 0. This makes it possible to easily alternate 80 column text displays and graphics screens under program control.

If any of the control codes normally interpreted by the FV80 as editing or function commands are required to be entered as text, the character must be preceded with an escape code (ESC) or all control code execution may be deselected with a single poke.

Although the performance of the FV80 is quite satisfactory a few caveats are in order. This is a new device, the first of its kind for the Atari, and I did discover some flaws in the Bit 3 unit, all of them involving the on-board control software:

(1) "CTRL 3" is not supported as end of file for the screen editor. Some software makes use of this feature. I found myself "lost in the ozone" after preparing a screen full of data and attempting to enter an EOF.

(2) The graphic representations of the characters for "CTRL F/G/H/J/;/,/." were wrong on my FV80. For example, a "CTRL F" printed as a graphics club.
Even so, machine language strings typed in containing any of these characters were incorrect in their screen appearance they were correct internally and functioned properly.

(3) A GRAPHICS 0 statement does not clear the screen and position the cursor at the top of the display.

(4) Although the speed of the display under most circumstances is fine, the execution of the Insert Line function (SHIFT/INSERT) is noticeably slothlike.

Fortunately, items one through three can be remedied by changes to the FV80's firmware. According to Bit 3, new EPROMS incorporating such revisions will be made available at nominal cost to present FV80 owners. The factory's technical staff always returned my calls promptly and were always courteous and helpful. Bit 3's confidence in the board is evidenced by a one year warranty, a welcome change from the usual three month guarantees so prevalent these days.

The manual contains a good deal of technical information, including descriptions of FV80 firmware and hardware characteristics and instructions for making custom character sets for those who have access to EPROM burners. The FV80s character set is not redefinable on the fly, as is the standard Atari display.

A short list of compatible software is also provided, as well as instructions for using the board with Microsoft Basic. At this time, only one manufacturer has committed to produce packages written especially for the Full-View 80. Before rushing out and spending a good chunk of your resources on an FV80 board, monochrome monitor and eighty column software, one would be well advised to insure that the software available fully meets anticipated needs.

Modifying existing software is out of the question for many casual users. For example, I was able to make my smart T.H.E. Terminal program use eighty columns only because the author, Tom Giese, is a fellow MACE (Michigan Atari Computer Enthusiasts) member, and was willing to drop by and work things out. The average user just can't count on support like that. Even those with some degree of skill can forget about modifying protected software.

Hardware doesn't make software happen by virtue of its very existence. If the Full-View 80 is to gain wide acceptance, Bit 3 must actively promote the product within the software development community. Hopefully, existing products such as Word Processors, Terminal Programs and Data Bases will be modified to support both forty and eighty column modes at little or no additional charge. Let's hope more software authors are bitten by the eighty column bug. The Full-View 80 hardware is ready for them and is certainly up to snuff.

Thanks to Ed and Dave from RWE in Warren for the loan of the Full-View board and Kaga monitor.

JOYSTICK ALTERNATIVES

by Sheldon Leemon

Because the microcomputer industry started from a number of small companies, each with its own unique hardware systems, the evolution of standards for peripheral devices which would allow them to be used interchangeably on different microcomputer systems has been slow indeed. In one area important to the home computer enthusiast, however, a new standard appears to be emerging--the Atari joystick. With seven million or more VCS systems currently in American homes, this stick has become too large a factor as an input device to ignore. Several manufacturers have designed interface units so that the Atari joystick can be used on Apple and Radio Shack computers, and the new Commodore 64 and VIC have joystick ports which are plug-compatible with this kind of joystick.

Although superior to a lot of controllers that have gone before, the Atari joystick still has many serious drawbacks. First, it is strictly a pressure driven device. By moving the stick to one side, a plastic rod pushes a pad on a circuit board, which closes a switch. The pad is fairly reesistent to pressure, so that when the stick is released, the pad pops back up, and the stick centers itself. As a side effect of this, however, the stick is fairly unresponsive--nothing will register before you apply an amount of pressure is sufficient to close the switch. Since the pad resists pressure, the amount of travel afforded the stick is limited, and this gives the controller a stiff feel.

An associated problem is durability. Because the feel is stiff, many players push harder to get a faster reaction time. After a while, they can feel the action getting looser. Far from being a good sign that the stick will be easier to play, this may be a signal that the pressure pad is pooped, and that the stick will soon fail to respond to presses in one or more direction. An enthusiastic game player will find the life span of these joysticks relatively short.

Another problem with the stick is that of hand fatigue. There are two general positions in which the right-handed game player can hold the stick. Grasping the stick handle in his right hand, he can either hold the base in his left, or put the base on the table or floor, and use his left hand to steady the base against the flat surface. In either case, while the left hand is trying to keep the base steady, the right hand is jerking the stick around in order to register the press. The effect of this is that the right hand is always trying to tear the base from the grasp of the left. Since the right hand has the leverage of the stick working for it, the left must work much harder to steady the base, al the while holding it in an awkward position. The fatigue that results is nature's way of telling you to turn off the TV.

You will notice that in the paragraph above, I referred to the right-handed player. That is because the fire button is on the left side of the base. This means that the left-hander has the choice of either rewiring the stick (fairly easy, because the plug mates with the circuit board using little clip-on connectors), or becoming ambidexterous in a hurry. When you are talking about several millions of users, this is not as small an oversight as you might think.

Manufacturers have been no less slow to spot these defects than the public, and have become actively involved in a contest to build a better joystick. The first entry in this race was Le Stick($39.95, by Datasoft). Le Stick represents a totally new approach. It is strictly a one-handed device, which uses gravity-switches to indicate the direction of motion desired, and has a fire button located on top of the stick. To use it, you physically point the stick in the direction desired. This completely eliminates the problem of opposite-hand fatigue, as well as giving equal time to lefties. The major problem is the sensitivity of the switches. It is not as easy as it sounds even to hold the stick straight up. Fast direction changes can be a real problem, particularly for someone just getting used to the stick. A special switch is provided to help with this, by disabling the stick when you squeeze it. Even so, it may take as much skill learning how to use this stick accurately as it does to learn how to play most arcade games. Le Stick has not become very popular.

Another recent entry has been the Zircon stick. Like Le Stick, it consists of only a

(continued)

molded stick grip, without any base, and like Le Stick, this design helps to reduce fatigue, and can be used equally well with either hand. But instead of using gravity switches, it has a triangular knob set close into the handle, which you push to close the switches. This knob is spring-loaded, and has a very loose action. While response time is good, accuracy suffers. Also the knob is so close to the stick handle itself that you get less leverage that might be desired. The shape of the knob is such that in order to grasp it you have to assume a position that can, over time, become uncomfortable. The biggest drawback, however, is the firing mechanism. This is activated by pushing the knob head down, plunger-fashion. This switch is also spring loaded, and allows for a fair amount of travel up and down. This means that not only can you move the knob back an forth and side to side, but up and down as well. The amount of play this introduces into the system makes it too easy to move the stick in an unintended direction. Even those who have no trouble walking and chewing gum at the same time may find moving while firing to be a challange.

The Wico Command Control Joystick ($29.95, Wico Corporation) is constructed very much along the same lines as Atari's stick, but is engineered to be more responsive and durable. This stands to reason, as Wico claims to be the "worlds largest designer and manufacturer of control devices for commercial arcade games". The controller consists of a long arcade-style bat handle grip, set on a square base. The stick handle itself is about an inch longer than Atari's and is made of metal, covered with red plastic. The switches are leaf-type, and are spring-loaded to provide self-centering. The base is of heavy molded plastic, and is larger than that of the Atari controller. The base also has a recessed ridge in the front and back, which makes it slightly easier to grasp with the opposite hand. Although it has a fire button located on the left side, it also has a button in the handle that can be switch-selected. Wico says that this arrangement prevents unintentional firing of the remaining button, but I think that it would be more convenient to be able to alternate firing of the buttons. At any rate, both buttons are very sturdy, and very easy to push. The stick itself is quite responsive compared to Atari's, and that helps to reduce opposite-hand fatigue, as does the size and shape of the base. The spring return provides good tension, which aids accuracy. When compared to the Atari stick, the improved handling of the Wico stick may not make enough of a difference to instantly turn you into an arcade wizard. But the superior durability of this stick, which comes with a full one-year warranty, is enough to make it a serious candidate to consider when you are in the market for a joystick replacement. Wico offers some variations on the basic stick. The Famous Red-Ball Joystick has a red ball at the top of the handle, and the Joystick Deluxe has a larger and heavier base. Wico also markets adapters that enable you to use the stick with the Texas Instruments Home Computer, the Apple II, and the TRS-80 Color Computer.

While not exactly an alternative controller, the Stick Stand ($6.95, K-Byte) is an accessory designed to overcome some of the drawbacks of the Atari Stick. It consists of a black plastic base into which you set the base of your Atari stick, and a red knob to place at the top of the stick. This combination allows you to place the stick on a flat surface, and get a better grip and more leverage on the handle, without the need for much opposite-hand steadying. Although this increased leverage gives you more response, and better control of the stick, it also increases the wear on the stick. I have already heard it nicknamed "the Stick Breaker". But with the life of an Atari stick so short anyway, it may be worth it to make the most of what little time you have.

Just as dozens of manufacturers have entered the Atari VCS software market recently, we can be sure, too, that these few alternative controllers are just the first of many to follow. Already, trackball controllers are being advertise=d by Wico, and they soon may be joined by Roklan, and/or Datasoft. Commodore has been promising a revolutionary new joystick compatible with the VIC and Atari. It remains to be seen, however, which, if any, of these new entries will prevail. The reaction of an individual to a particular controller is such a subjective thing that there is no way that any one controller will have the best "feel" for everybody who uses it. Although I have tried to state objective reasons for my opinions, in the end, only exhaustive test-zapping will allow you to decide which one you like the best.

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STRING ARRAYS IN ATARI PILOT

by Sheldon Leemon

Atari PILOT is a relatively simple language, with only a few types of commands, a limited number of numeric variables, and integer math capability. Some people might mistake this simplicity for a lack of power. For those who look a bit more closely, however, the language is not as limited as it might seem on first glance. One example is its string-handling capability. A casual examination of the language would show it to be limited to one-dimensional strings. But with a little thought, string arrays may be easily simulated.

The method for accomplishing this is derived from two unusual characteristics of Atari PILOT. The first is string indirection. The best way to explain this feature is by example. Examine the program fragment below.

```
10 C:$TITLE=NAME
20 C:$NAME=BOB
30 C:$BOB=TITLE
40 T:$TITLE
50 T:$$TITLE
60 T:$$$TITLE
70 T:$$$$TITLE
80 T:$$$$$TITLE
90 E:
```

When you type T:$TITLE, you get the value of the string, which is NAME. But when you type T:$$TITLE, you get the value of the string formed by adding a dollar sign in front of the string contents ($+NAME=$NAME). Therefore you get the contents of the string $NAME, or BOB. This indirection will continue, level after level. Try the above example, and you will find that $$$$$$TITLE=TITLE!

The other feature of PILOT string handling that makes string array simulation possible is its simple method of string concatenation, or putting two strings together to form another, larger string. You can assign the value of the pieces of text you want to a string just by typing them, one after another, on the right side of the assignment equal sign. For example, if $NAME=BOB, and #A=1, you can use these variables as part of the larger string $SENTANCE by typing C:$SENTANCE =THE NAME OF BOY #A IS $NAME. This sets $SENTANCE equal to THE NAME OF BOY 1 IS BOB.

Now, we should be ready for our first example of a string array.

```
10 C:$NAME1=BOB
20 C:$NAME2=JOE
30 C:$NAME3=MAY
40 C:$NAME4=ADA
50 *INPUT T:
60 T:ENTER A NUMBER FROM 1 TO 4
70 A:#N
80 C:$TEMP=NAME#N
90 T:NAME #N IS $$TEMP
100 J:*INPUT
```

As you can see, there are four names in $NAME1-4. We can select any of these four names by typing in the number that corresponds to the last character of the string name. The number is added to the word NAME, and assigned to the string $TEMP. For example, if #N=1, then $TEMP=NAME1. By using indirection, $$TEMP can be used interchangeably with the name of the string whose number has been chosen, in this case $NAME1.

Such manipulations open up a world of possibilities. For example, I have used a simulated string array in the example below to roll a pair of dice on the screen. When you enter this example on the computer, you need not type comments, which are set off with a left bracket ([), and which explain parts of the code.

```
100 U: *INITDICE
110 *MAINLOOP C:#C=0
120 C:#X=21
130 U: *ROLLDICE
140 *WAITKEY J(@B764=255): *WAITKEY
150 C:@B764=255
160 J: *MAINLOOP
170 *ROLLDICE
180 C:#X=#X+6        [#X=21
190 C(#X=27):#X=15    [OR #X=15
200 C(#X=15):#T=0     [RESET TOTAL
210 C:#D=?\6+1       [#D=RND# 1-6
220 C:#T=#T+#D        [ADD DICE
```

```
230 C:@82=(#X+2)*256+#X[SET MARGINS
240 C:$NAME=DIE#D
250 POS: #X,10
260 T:$BLANK          [BLANK DIE
270 POS: #X,10
280 T:$$NAME          [$DIE#D
290 C:#C=#C+1
300 C:@B53279=0       [CLICK
310 J(#C<20): *ROLLDICE
320 C:@82=9986        [MARGINS BACK
330 POS:25,11
340 T:=#T_
350 E:
360 *INITDICE
370 R:When typing the following
380 R:strings, the O=inverse letter O,
390 R: and the dash(-)=inverse space
400 C:$DIE1=----O----
410 C:$DIE2=O-------O
420 C:$DIE3=O---O---O
430 C:$DIE4=O-O---O-O
440 C:$DIE5=O-O-O-O-O
450 C:$DIE6=O-OO-OO-O
460 C:$BLANK=---------
470 POS:7,7
480 T:HIT ANY KEY TO ROLL DICE
490 E:
```

A line-by-line explanation of this program should show you some of the more sophisticated side of PILOT. The first line calls the initialization procedure, INITDICE starting at line 5000. This sets up six stings, named $DIE1 through $DIE6, each holding the nine characters required for 1 die face. We simply use the letter O and inverse blanks to form the graphics in blocks of three letters by threee lines, like so:

```
*** O** O** O*O O*O O*O
*O* *** *O* *** *O* O*O
*** **O **O O*O O*O O*O
```

In order to get these nine characters to print out in three rows of three, we will change the left and right margins so that each line is only three characters long. Also, $BLANK will be defined as nine inverse space characters, so that we can erase the last "die" before drawing the next on top of it. After the strings are set up, the prompt "HIT ANY KEY TO ROLL DICE" is printed, and we return from the INITDICE block.

Let's skip now to the part of the program that does most of the work, ROLLDICE at line 170. This block starts out by setting #X, which will contain the value of the left margin setting. Lines 190 and 200 toggle this value between 15 and 21, which are the left margins of the two dice to be shown, by adding 6 to #X, and then setting X back to 15 when we get up to 27. If the left margin of the die to be drawn is 15, we are are dealing with die #1, and we therefore set #T, the total of numbers displayed back to 0, so that it will total each roll of two dice separately. Next, a random number between 1 and 6 is chosen by setting #D=?\6+1, which equivalent to the BASIC statement D=INT(RND(0)*6+1). At line 220, the random number #D is added to the dice total #T. Then, the fun begins. At line 230, we set the right and left margins simultaneously, by setting one machine variable, @82. We are able to perform the equivalent of POKEing 82 and 83 at one time, because machine variables are two-byte numbers. In two-byte arithmatic, the first byte holds one of 256 numbers from 0 to 255, and the second byte hold the number of 256's. Therefore, we can set 82 to #X and 83 to #X+2, by setting machine variable @82 to #X+256*(#X+2). This gives us our three character line.

Now, we get to the part of the code which simulates the string arrays. Line 240 sets $NAME equal to DIE#D. So, if #D happens to be 6, then $NAME=DIE6. This just happens to be the name of the string holding the graphics information for the six-spotted die, and when we POSition the cursor at the left margin in row 10, and print $$NAME, we get the correct die face printed out in three rows of three characters. As pointed out above, lines 260 and 270 just erase the last die before the next one is printed. I think it makes the "roll" look more authentic, but these lines can be omitted if the user wishes. After the die is printed, the counter #C is incremented, and a clicking sound is made by putting a 0 in location 53279. If the counter has not reached 20, the dice continue to roll with a Jump back to ROLLDICE. When we have rolled the dice enough times, the margins are set back to the default values of 2 and 39, the total dice value is printed next to the dice, and the procedure ends.

The section of code containing the main program loop is called MAINLOOP. First, it sets the variable #C to 0, to be used as a

(continued)

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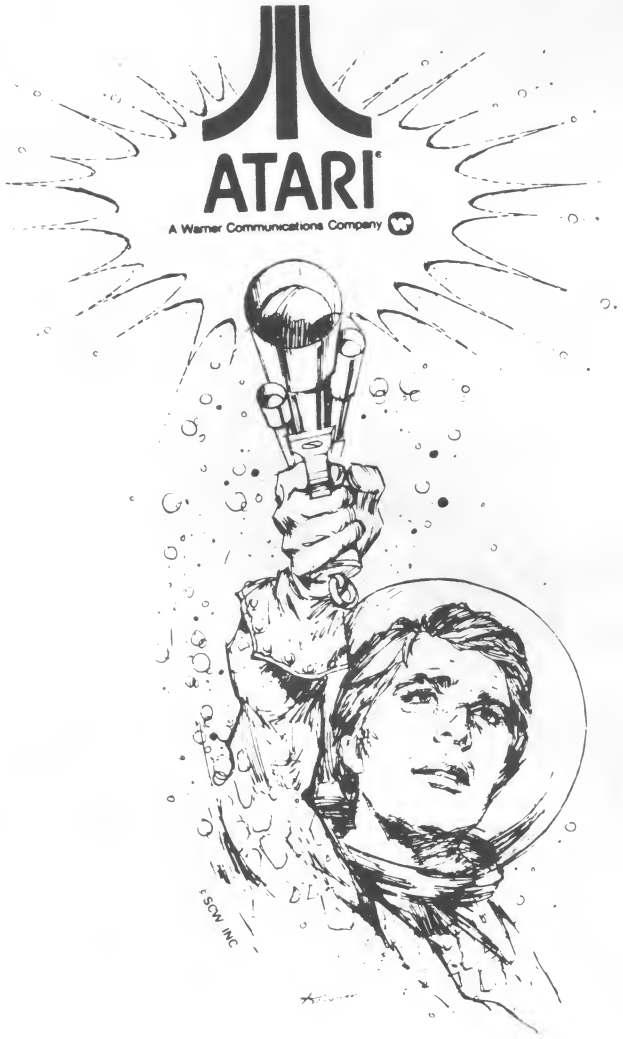
counter for how many times we want the dice to roll. Next, ROLLDICE is called to roll the dice twenty times, ten rolls for each die. Then, the procedure WAITKEY keeps checking the keycode register (@B764) until a key is hit, changing the value from 255. When a key is hit, the register is reset at line 160, and the dice are rolled again.

I hope that this demonstrates some of the less-obvious advantages of PILOT as a programming language. Simulated string arrays and two-byte POKES are just a couple of the techniques which demonstrate the range of this language. Such techniques, combined with the more obvious text-processing and recognition features of PILOT, make it a language that is not just easy to use, but powerful enough to be useful for programming complex applications.



MACE PROGRAM PUZZLE CORNER

by Charles (Puzzled) Godfrey

(Editors Note: The answers to Puzzles 2 & 3 will be printed in the November newsletter)

Forty, nay fifty lashes with a wet power cord for your puzzle master. Two things in this world are unforgivable. One is running out of gas in the car, and the other is publishing a program that contains an error. What's worse is I was giving credit for the program to someone else. My apologies to all who may have given up trying to solve puzzle-1 with the printed solution, and especially to Mark Sokolik who wrote the program correctly in the first place. The error was in line 30 by not incrementing the "KILL" counter.
Here is the correct solution (and this time I tested it first):

```
 DIM GROUP(1000):POKE 559,0
15 FOR X=1 TO 1000:GROUP(X)=1:NEXT X
20 P=1:L=1:D=0:F=0
30 IF F=0 AND GROUP(P)=1 THEN
GROUP(P)=D:L=P:KILL=KILL+1:F=1:P=P+1:IF
P>1000 THEN P=1
40 IF KILL = 1000 THEN GOTO 100
50 IF GROUP(P)=1 THEN F=0
60 P=P+1:IF P>1000 THEN P=1
70 GOTO 30
100 POKE 559,34:? "LAST ONE KILLED IS ";L
```

==========

PUZZLE 4

==========

Your rich Uncle from out of state just came to visit and is fascinated by our Daily lottery. It seems a natural, with his money and your computer there is a fortune to be made. Ah, but not with this puzzle. Your Uncle has decided that his best chances are to play many numbers and bet on any combination to give him a winner. He doesn't really care how much he loses, just so he is guaranteed at least one winner. For the uninitiated, Uncle wants to play the method where if he bets on the number 001, he will win if 001, 010, or the number 100 is picked.
So, with those thoughts in mind, your challenge is to find the minimum number of tickets, and the numbers, that must be purchased to guarantee a winner. Send your answers to:

Charles Godfrey
29646 Chelmsford
Southfield, MI 48076
559-1272 (puzzle clarification questions only

FASTCHIP

New Floating Point ROM

(Review by A.R.Dias)

Newell Industries is offering a new version of the floating point ROM for the ATARI Home Computer System.

The floating point ROM is a collection of machine language routines for floating point operations such as floating point to integer conversion (and vice-versa), polynomial evaluation, logarithms, etc...ATARI Basic carries all arithmetic operations in floating point and even integer arguments (as used in graphics commands) are converted from floating point to integer.

The original floating point routines are notoriously slow and most notably the floating point multiplication so often used. The FASTCHIP is a pin-compatible replacement for the original ROM and the new routines are significantly faster. The speed improvement is readily noticed but, naturally, more dramatic in programs making heavy usage of math functions.

The following table compares execution times between the original ROM and the FASTCHIP. The times are in seconds and correspond to a 1000 loop!

```
10 REM Start Timer
20 FOR LOOP=1 TO 1000
30 REM Insert Function here.
40 NEXT LOOP
50 REM Read Timer
```

FUNCTION	Orig. ROM	FASTCHIP
A=LOOP*LOOP	8.89	6.48
A=CLOG(100)	120	30
A=COS(23)	84	33
A=LOOP^3	236	65
A=SQR(LOOP)	135	55

The FASTCHIP is available from Newell Industries, 3340 Nottingham Ln., Plano, TX 75074 (214) 423-1781. The cost is $41.95 prepaid (check or money order) or C.O.D. for $1.50 extra. A dealer network is now being installed.

The ROM is readily installed in an 800 system (in the OS card) and requires a little more effort in a 400.

In my personal experience with this product, I am pleased with its performance. The level of accuracy is comparable to the original one (if not slightly more accurate). Its roundoff errors are within the 9-10 digits of precision and the CLOG(0), LOG(0) errors are still present. The dynamic range is expanded (1E-120, 1E120). Overflow is not always acknowledged, though.

Nautilus and Shamus

Software Review

by Nomeel Nodlehs

These two new games from Synapse Software prove the old adage about appearances being deceiving. While Nautilus is by far the more visually appealing, Shamus has a certain intangible quality which makes you want to keep playing long after the novelty has worn off.

Nautilus is a sub-hunt game for one or two players, in which one player commands a submarine and tries to destroy underwater cities, while the other player (or the computer) controls a destroyer which ferries repair crews from the home base to the repair tunnels from which they can rebuild the cities. The game display makes use of an innovative technique which exploits the advanced graphics capabilities of the Atari; the screen is split horizontally into two independently-scrolling windows, one for the sub display, and the other for the destroyer on the surface. The window for the sub scrolls both horizontally and vertically over the beautiful underwater seascape. When the destroyer is positioned over the sub, so that the two windows coincide vertically, the border turns red to alert the players of the possibility of an enemy attack. There are nine skill levels which can be selected to increase the speed of play, and a 8 levels of handicapping to control the score of the destroyer. In addition, the game continues for a predetermined time period, ranging from 3 to 9 minutes, which is player-selectable.

My only criticism of the game is purely subjective. I found that despite the technical virtuousity displayed, after a while the novelty wore off, and the game became repetitive, and somewhat mechanical. This is the same reaction I have had to other games written by Mike Potter, such as Chicken and Protector, although both of those games have large followings of admirers who would strongly disagree with my position. Therefore, while I can't enthusiastically recommend it, I can say that it is technically inventive, extremely well executed, visually appealing, and for those reasons alone is at least worth considering.

Shamus does not have the same kind of outstanding graphics as Nautilus. In Shamus, you play the title character, a stick-figure detective who has to solve several puzzles while at the same time fighting off hordes of shoot-em-up stick figure bad guys. There is a minimum of color, and the resolution of the graphics is not the greatest. One compensating factor is the sound effects and music, which are appropriate, helpful, and never irritate as those in Nautilus occaisionally do. But the biggest compensating factor is that the game is great fun to play!

Shamus is set in the Lair, a maze-like series of rooms. There are four levels, each with 32 rooms. As you enter each room, the room number appears on the screen. These rooms always appear in the same order, so that the left doorway from room 2 leads to room 1, and the right doorway leads to room 3. Some doorways can only be opened by the use of keys, which you must pick up in other rooms. Though usually in the same general area, these keys are not always in the same room each game. Since the keys for some locks can only be obtained after another lock has first been opened, it becomes necessary to memorize or map the various locations of keys and locks. But all of this adventure-type puzzling occurs in the midst of a fast action game. For each room is guarded by several of three types of adversaries, Drones, Droids, and Snap-Jumpers, each type with its own method of attack. You must try to clear the room of enemies with your Ion weapon. While you can leave a room before it is cleared, if you come back again you will find that there are now twice as many enemies! To further complicate matters, there is a limit on the amount of time you can spend in any one room. If you stay too long, your arch-rival Shadow appears. He cannot be destroyed by your weapons, only briefly stunned, and you must flee if he enteres the room. Only after you finish the whole puzzle, consisting of 4 levels of 32 rooms each, do you have your final showdown with Shadow.

Many random elements add to the fun. There are pulsing question marks which you may pass over, and which randomly distribute

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bonuses (such as extra points, or extra lives) or penalties (such as taking away one of your hard-earned keys). Extra lives may be obtained from bubbling bottles located randomly within the Lair. There are Pod Rooms, which exist in another dimension, and which can only be entered during a narrow window of time. Plus, there are many little puzzles to solve along the way. If the puzzles themselves are not enough of a challange, there are four levels of play, each of which substantially increases the difficulty of the arcade shoot-em-up action, making the final objective harder to reach.

The combination of arcade action and adventure type problem solving is a great one. I have found that not only is Shamus enjoyable to play alone, it is even more enjoyable with a group of people, each taking turns alternately playing and mapping the Lair. The need for a navigator makes it just as much fun to watch someone else play, and offer suggestions, as it is to play the game yourself. You don't need to be a detective to figure out that I think Shamus is a standout in the current field of game software.

S.I.G. NEWS

Assembler Language SIG Report

By Phil Heavin, Secretary, SIGASM MACE

September Meeting Minutes

At the September meeting we added a new feature to our socializing period, a SIG program exchange. The beginning of this disk was a program to demonstrate a method to start an arcade style game tO be discussed at the October meeting.

As usual the business portion was held to a minimum and then we moved on to something new which will be a regular feature for the next few months, Tom Hunt conducted a short session describing the application of the 6502's bit manipulation instructions. Future sessions will cover other logical groups of the 6502 instruction set.

Next, Russ Gill conducted a session for new users of the ATARI Assembler Editor cartridge. This session was very well received. Some of the initial learning experiences can be frustrating for the beginner and Russ helped our SIGASM members avoid many of these pitfalls.

November's Meeting

November's meeting will be Thursday, the 4th at the home of Pat McCabe in Mount Clemmens. You can contact Pat at 791-0946 or me at 939-6213. The meeting will begin at 7:00 with socializing and free form discussion with the actual business portion starting at 7:30. We hope to see you there.

Forth Language SIG Report

by Todd A. Meitzner, Manager SIG/FORTH MACE

SIG-FORTH held its September meeting on September 1st. The meeting started with general socializing but continued with a talk by our assistant manager Tom Chrapkiewicz describing how a word is entered in the FORTH dictionary. Then a new editor for fig-FORTH 1.5S was released to the members and a brief description on how to use it was given.

Discussion was then directed to the possible writing of a simple game in FORTH. A member brought a game in for this purpose. The meeting broke up into some general discussion of FORTH.

The October meeting was on October 6th. The exact agenda for this meeting was not finalized at the time of this writing but scheduled for this meeting is the release of a DOS oriented FORTH called Mesa-Forth brought out by the Austin Atari Computer Enthusiasts group in Texas. This makes two public domain FORTHs, the other being fig-FORTH 1.5S brought out by Bay Area Atari User Group in San Jose, California.

As consistent with all previous meetings, the November and December meetings will take place on the first Wednesday of the month at 7:00 pm. The dates are November 3rd and December 3rd. The meeting place is Oakland Community College, Royal oak Campus in room B 119, the employee lounge. This room is located in Administration section B located off the main hall on the first floor, just enter the archway and walk straight back, it will be the door at where the corridor turns.

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ATARI MAGAZINE ARTICLES

PART ONE

compiled by
Ed Middlebrook

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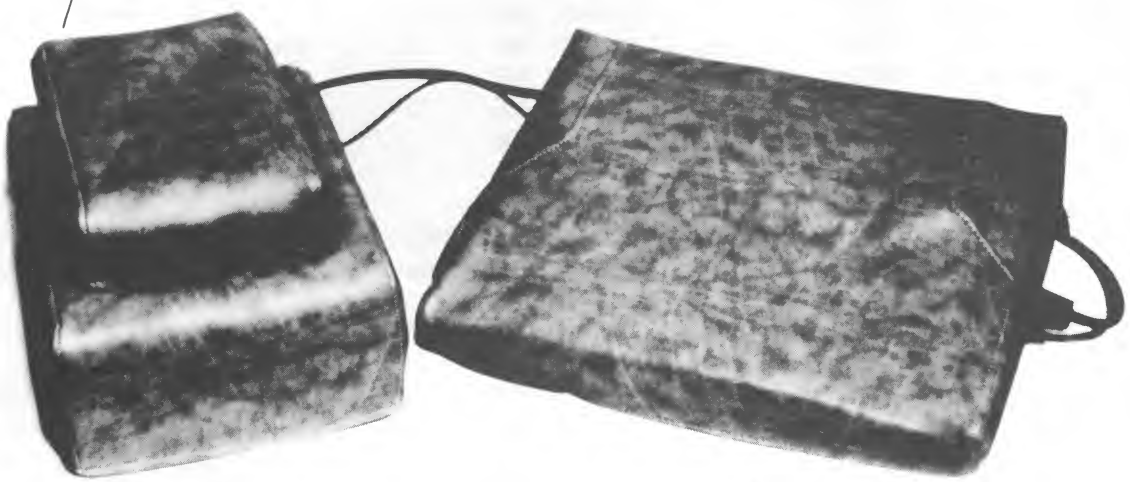

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OUTPOST ATARI: JUL 82	SMALL	PRODUCT REVIEW	CREATIVE	JUL 82
PERSONAL FINANCE SYSTEM	MIDDLEBROOK	PRODUCT REVIEW	MACE	FEB 82
PREHENSILE PROGRAMMING	ANDERSON	PRODUCT REVIEW	CREATIVE	SEP 82
REAR GUARD	LEVITAN	PRODUCT REVIEW	MACE	FEB 82
REVIEW: BASIC A+	BRANNON	PRODUCT REVIEW	COMPUTE	AUG 82
REVIEW: BASIC A+	WHITE	PRODUCT REVIEW	ANALOG	MAY 81
REVIEW: CCA DATA SYSTEM	SINGER	PRODUCT REVIEW	ANALOG	#4
REVIEW: EASTERN FRONT	McMAHON	PRODUCT REVIEW	COMPUTE	FEB 82
REVIEW: FANTASYLAND 2041	PATCHETT	PRODUCT REVIEW	ANALOG	#5
REVIEW: FILEMANAGER 800	MESSINA	PRODUCT REVIEW	ANALOG	#4
REVIEW: LETTER PERFECT	MESSINA	PRODUCT REVIEW	ANALOG	MAY 81
REVIEW: QS FORTH	BRANNON	PRODUCT REVIEW	COMPUTE	JUN 82
REVIEW: RICOCHET	MANSFIELD	PRODUCT REVIEW	COMPUTE	MAR 82
REVIEW: TEXT WIZARD	LATINO	PRODUCT REVIEW	ANALOG	#4
SANDS OF MARS	MESSINA	PRODUCT REVIEW	ANALOG	#4
SCREEN PRINTER INTERFACE	THORNBURG	PRODUCT REVIEW	COMPUTE	JAN 82
STOCK & BOND ANALYSIS	PAPPAS	PRODUCT REVIEW	ANALOG	JAN 81
STOCK CHARTING	AAMODT	PRODUCT REVIEW	MACE	APR 81
STUD POKER	BAKER	PRODUCT REVIEW	COMPUTE	MAY 81
SYNTEC LIGHT PEN	DUBIN	PRODUCT REVIEW	MACE	AUG 82
TARI TALKERS	HARMS	PRODUCT REVIEW	ANTIC	JUN 82
TEXT WIZARD	COMPUTE	PRODUCT REVIEW	COMPUTE	FEB 82
WIZARD AND THE PRINCESS	SMALL	PRODUCT REVIEW	CREATIVE	AUG 82
WORD PROCESSORS FOR ATARI	LOVELESS	PRODUCT REVIEW	ANTIC	APR 82
ATTACK ON THE DEATH STAR	ANTIC	PROGRAM - ARCADE	ANTIC	JUN 82
BATS	OCKERS	PROGRAM - ARCADE	MACE	JUL 82
BATS	OCKERS	PROGRAM - ARCADE	MACE	JUL 82
BLOCKADE FOR ATARI	PINHO	PROGRAM - ARCADE	COMPUTE	AUG 81
BLOCKED	BOHLKE	PROGRAM - ARCADE	ANALOG	JAN 81

End of Part One

MACE SIG GROUPS

MACE offers members the opportunity to explore specific applications of Atari Computing in Special Interest Groups (SIGS) where MACE folks with common areas of interest can meet more informally than would be possible at our general membership meetings.

The following groups have registered as official MACE Special Interest Groups:

SIG/ASSEMBLER
Manager: Tom Hunt
Secretary: Phil Heavin
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SIG/BASIC
Manager: Jim Spitzer
543-0961

BUSINESS SYSTEMS
Manager: Douglas Perenchio
776-7626

SIG/EDUCATION
Manager: Mark Davids
774-9709

SIG/FORTH
Manager: Todd Meitzner
542-1752

SIG/GAMES
Manager: Stephen Tobias
979-5740

SIG/GRAPHICS
Manager: Ken Hein
254-1761

SIG/HARDWARE
Manager: Chris Ratkowski
532-5421

SIG/NEW USERS
Manager: Michael Winters
645-2193

UTILITIES
Manager: Charles Godfrey
559-1272 Home
362-9110 Work

Get involved!! Join a MACE SIG today!!!

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